#### **Study Guide**

For

## West Virginia Underground Storage Tank System Repair Technician Certification

This Document has been prepared in conjunction with the West Virginia Department of Environmental Protection by:

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March 2013 (updated June 2018)

#### **Suggestions for Using This Study Guide**

This study guide is intended to help you prepare for West Virginia's Underground Storage Tank System Repair Technician Exam. The study guide consists of an extensive list of questions together with the documents in which the answers to the questions can be found. All of the questions from a specific document are grouped together in the study guide. After each question, the document section or page number where the answer can be found is given in parentheses. The process of reading the question, finding the answer, and writing the answer in your study guide will help you learn and remember the information you need to know to pass the certification examination.

The actual certification exam will include only the material covered in these study questions. The only difference is that the exam will be in multiple choice format. The exam will be open book. During the examination, you may refer to this study guide and any other reference materials that you wish. You are cautioned, however, that you will not have sufficient time to look up the answers to all of the exam questions. You should be thoroughly familiar with the materials in this study guide before you take the examination.

The study guide is based on a number of industry publications and manufacturers' literature. The use of these documents does not constitute endorsement of specific products by the West Virginia Department of Environmental Protection. These documents are used here as representative, authoritative sources of information regarding proper procedures for making repairs on underground storage systems.

### Suggested Study Guide Documents for the West Virginia Underground Storage Tank System Repair Technician Exam

#### **Study Documents**

PEI/RP1200-12 — "Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities"

PEI/RP100-11 —"Recommended Practices for Installation of Underground Liquid Storage Systems"

National Institute for Occupational Safety and Health (NIOSH) — "Working in Confined Spaces" (Publication 80-106)

OSHA - Permit Required Confined Spaces, 29 CFR 1910.146, Subpart J

OSHA — Lockout / Tagout 29 CFR 1910.147

Federal Underground Storage Tank Regulations: (40 CFR 280.12 through 280.53)

National Fire Protection Association (NFPA) 30A — "Code for Motor Fuel Dispensing Facilities and Repair Garages", Chapter 5 and 6 (2012 Edition)

WVDEP — "Miscellaneous Testing Report Form" — Revised 7/19/2010

It is highly recommended that you obtain a copy of each of the study guides to review prior to taking the examination. Some of the study guides are free publications, and are being provided as a courtesy to you by the WVDEP. For study guides that must be purchased, we have included information on where they can be obtained. Please note that information on purchasing study guide materials may change at any time. For this reason the purchasing information provided may not be correct. It is the sole responsibility of the applicant to obtain the necessary study guide materials to prepare for this exam.

PEI/RP1200-12 — "Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities", 2012 (Petroleum Equipment institute)

-Must be purchased from Petroleum Equipment Institute, P.O. Box 2380, Tulsa OK 74101 Phone 918/494-9696 http://www.pei.org, see "Publications & Resources" tab

PEI/RP100-11 — "Recommended Practices for Installation of Underground Liquid Storage Systems" (2011)

-Must be purchased from Petroleum Equipment Institute, P.O. Box 2380, Tulsa, OK 74101 Phone 918/494-9696 http://www.pei.org see "Publications and Resources" tab

National Institute for Occupational Safety and Health (NIOSH) — "Working in Confined Spaces" (Publication 80-106)

-Free document, provided by WVDEP

OSHA - Permit Required Confined Spaces, 29 CFR 1910.146, Subpart J
-Free document, provided by WVDEP

OSHA — Lockout / Tagout 29 CFR 1910.147 Lockout / Tagout -Free document, provided by WVDEP

Federal Underground Storage Tank Regulations: (40 CFR 280.12 through 280.53)

Free document, provided by WVDEP

National Fire Protection Association (NFPA) 30A — "Code for Motor Fuel Dispensing Facilities and Repair Garages", Chapter 5 and 6 (2012 Edition)

 Must be obtained from the National Fire Protection Association (NFPA), available at: <a href="https://www.nfpa.org">httio://www.nfpa.org</a> see "Codes & Standards" tab, or phone 800-344-3555 for customer sales

West Virginia — "Miscellaneous Testing Report Form" -Free document, provided by WVDEP

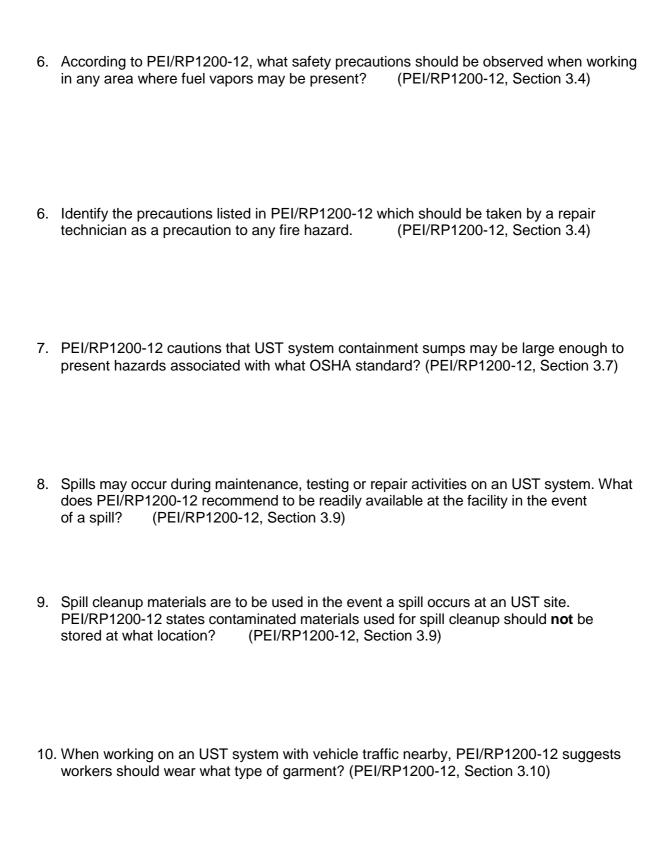
#### "Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at **UST Facilities**"

#### (PEI/RP1200-12, Petroleum Equipment Institute, 2012)

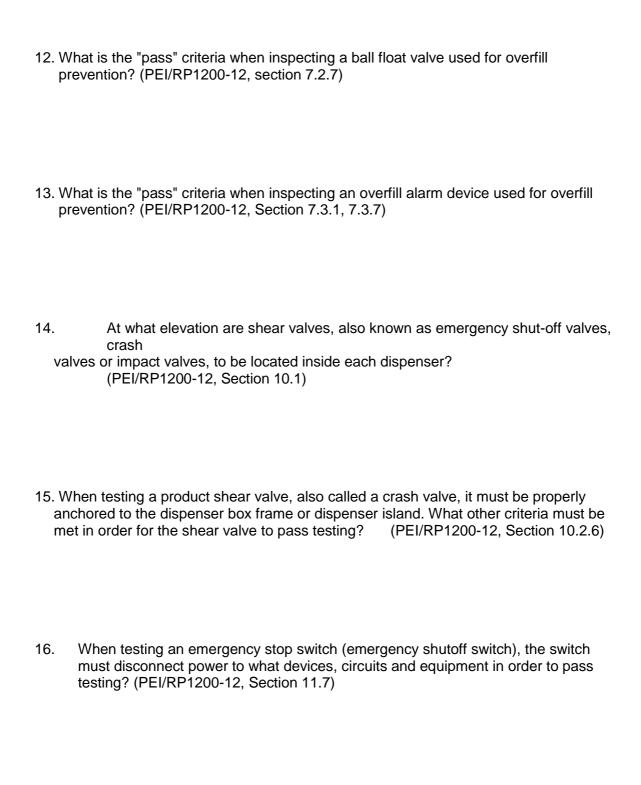
(Study Guide Questions for West Virginia Underground Storage Tank System Renair

	Technician Exam)
1.	What type of equipment should be worn to minimize the risk of exposure to potentially toxic chemicals in petroleum products? (PEI/RP1200-12, Section 3.2)
2.	What action should be taken if motor fuel comes into contact with eye tissue? (PEI/RP1200-12, Section 3.2)
3.	In the event motor fuels are swallowed, what is the correct procedure to follow? (PEI/RP1200-12, Section 3.2)
4.	What hazards can improperly wired, worn or unprotected electrical equipment create? (PEI/RP1200-12, Section 3.3)
5.	What OSHA requirement must qualified persons understand and comply with when servicing electrical equipment? (PEI/RP1200-12, Section 3.3)

PEI/RP1200-12 Page 1



PEI/RP1200-12 Page 2



PEI/RP1200-12 Page 3

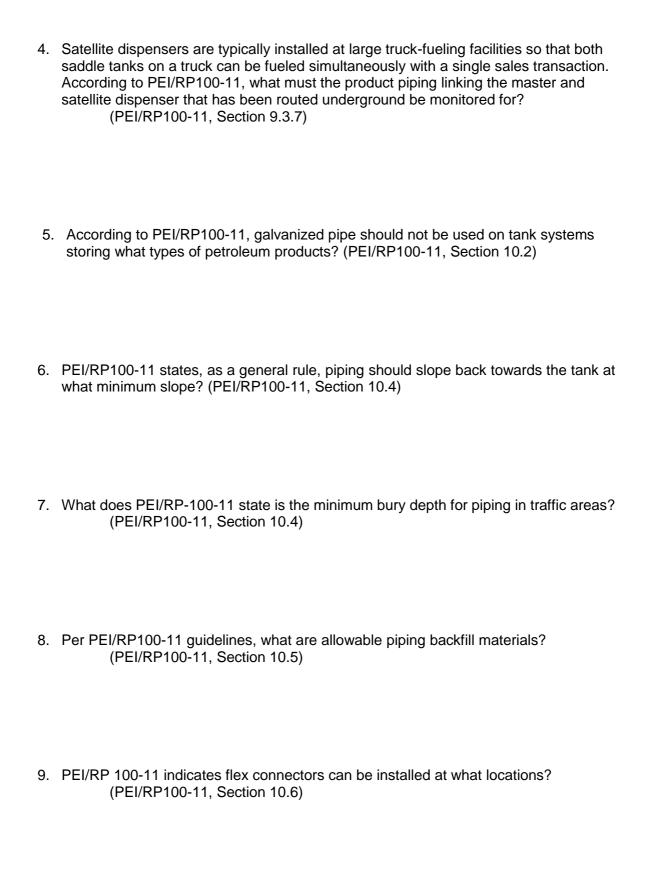
### "Recommended Practices for Installation of Underground Liquid Storage Systems"

#### (PEI/RP100-11, Petroleum Equipment Institute, 2011)

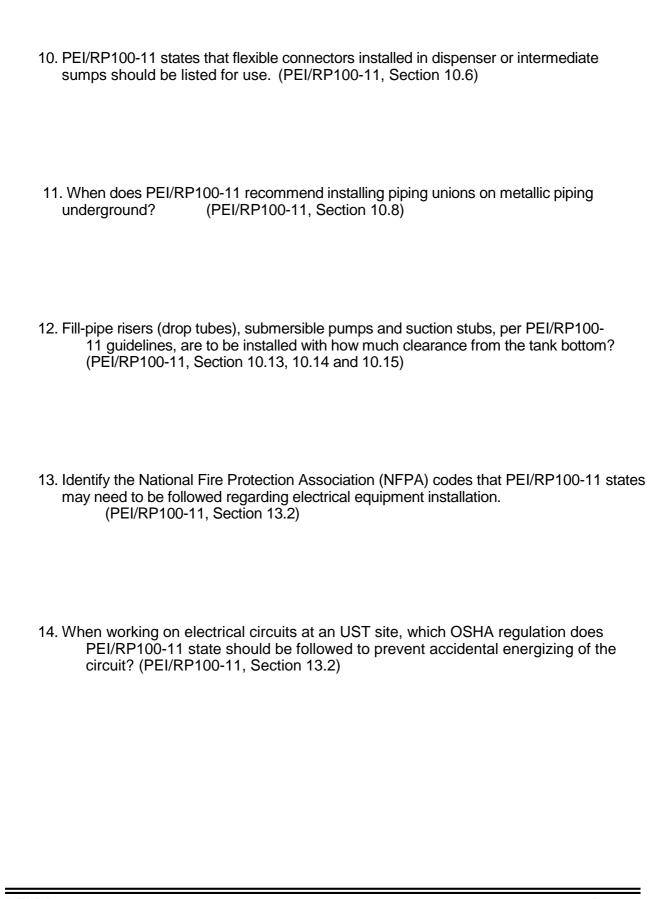
(Study Guide Questions for West Virginia Underground Storage Tank System Repair Technician Exam)

not be	100-11 warns that vent-restriction devices, also called ball float valves, mus used under what 5 specific conditions? (PEI/RP100-1, Section 7.3.3)
;	2 .
;	3.
	4.
:	5.
	ng to PEI/RP100-11, where should a liquid sensor in a dispenser sump used fo tection be located? (PEI/RP100-11, Section 8.7)
	the name of the sumps used for reason of extending existing piping systems eating branches in piping? (PEI/RP100-11, Section 8.6)

PEI RP100-11 Page 4



PEI RP100-11 Page 5



PEI RP100-11 Page 6

#### "Working in Confined Spaces"

### (National Institute for Occupational Safety and Health {NIOSH}, December 1979, Publication 80-106)

(Study Guide Questions for West Virginia Underground Storage Tank System Repair Technician Exam)

1.	What are the three conditions that NIOSH uses to define a "confined space"? (NIOSH, p. 1)
2.	What is the NIOSH definition of a "Class A" confined space? (NIOSH, p. 1)
3.	What is the NIOSH definition of a "Class B" confined space? (NIOSH, p. 1)
4.	What is the NIOSH definition of a "Class C" confined space? (NIOSH, p. 1)
5.	What is the NIOSH definition of hot work? (NIOSH, p. 2)
6.	What is the NIOSH definition of "lower flammable limit"? (NIOSH, p. 2)

7.	What is the normal percentage of oxygen in the air at sea level? (NIOSH, p. 2)
8.	What is the NIOSH definition of "qualified person" as defined by NIOSH? (NIOSH, p. 2 and 3)
9.	What is the NIOSH definition of a standby person? (NIOSH, p. 3)
10.	Below what percentage of oxygen is a confined space atmosphere rated as Class A? (NIOSH, p. 4)
11.	Between what percentages of oxygen is a confined space atmosphere rated as Class B? (NIOSH, p. 4)
12.	Between what percentages of oxygen is an atmosphere rated as Class C? (NIOSH, p. 4)
13.	Above what percentage of the lower flammable limit (LFL) is an atmosphere rated as Class A? (NIOSH, p. 4)

14. Between what lower flammable limit (LFL) percentage is an atmosphere rated as Clas B? (NIOSH, p. 4)
15. Below what lower flammable limit (LFL) percentage is an atmosphere rated as Class C? (NIOSH, p. 4)
16. For which classes of confined space work is a permit from a qualified person required before the space is entered? (NIOSH, p. 5)
17. For which classes of confined space work is atmospheric testing required before the space is entered? (NIOSH, p. 7)
18. For which classes of confined space is training of personnel required before performing confined space entry work? (NIOSH, p. 5)
19. For which classes of confined space entry is a trained standby person always required What piece of equipment must this standby person have at hand? (NIOSH, p. 6)

20.	Who's responsible for securing/completing a confined space entry permit? (NIOSH, p. 6)
21.	For what length of time is a confined space entry permit valid? (NIOSH, p. 7)
22.	For which classes of confined space entry must there always be someone readily available who is currently trained in cardio-pulmonary resuscitation (CPR) and basic first aid procedures? (NIOSH, p. 8)
23.	Who is responsible for training personnel and for the safety of the entire confined space entry operation? (NIOSH, p. 8)
24.	Before entering the confined space, what three types of tests must be made to insure that the atmosphere is safe? (NIOSH, p. 9)
25.	Hot work is prohibited whenever the atmosphere in the confined space is greater than what percent of the LFL? What additional measurement must be made to be sure that the flammability measurement is correct? (NIOSH, p. 9)
26.	Below what percentage of oxygen in a confined space must approved respiratory equipment be used? (NIOSH, p. 10)

27.	What are four types of personal protective equipment normally used to protect employees against traumatic in ury in confined spaces? (NIOSH, p. 11)
28.	What is the result of trying to breathe in an atmosphere where oxygen has been completely displaced by nitrogen? (NIOSH, p. 27)
29.	What are the physiologic (physical) effects of breathing in an atmosphere that contains 17 percent oxygen? (NIOSH, p. 27)

## Occupational Safety and Health Standards (OSHA), Subpart J — General Environmental Controls, "Permit Required Confined Spaces" (OSHA Standard Number 1910.146)

(Study Guide Questions for West Virginia Underground Storage Tank System Repair Technician Exam)

	Repair Technician Exam)			
1.	Define "confined space" per OSHA 1910.146 guidelines. (OSHA 1910.146 (b))			
2.	Identify the potential causes for a "hazardous atmosphere", according to OSHA 1910.146. (OSHA 1910.146 (b))			
3.	According to OSHA 1910.146, what are the responsibilities of an "entry supervisor"? (OSHA 1910.146 <i>(b))</i>			
4.	Identify the potential characteristics of a "permit-required confined space". (OSHA 1910.146 (b))			
5.	Per OSHA 1910.146 guidelines, when is a written confined permit space program required? (OSHA 1910.146 (c)(4))			

6.	Per OSHA 1910.146 guidelines, what must the internal atmosphere of a confined space be tested for before entry is allowed? (OSHA 1910.146 (c)(5)(ii)(C))
7.	Per OSHA 1910.146 guidelines, when using forced air ventilation in a confined space, how long must air ventilation continue? (OSHA 1910.146 (c)(5)(ii)(E)(2))
8.	According to OSHA 1910.146 guidelines, in the event a hazardous atmosphere is detected in a confined space while occupied by an employee, what must the employee in the confined space immediately do? (OSHA 1910.146 (c)(5)(ii)(G)(1))
9.	Per OSHA 1910.146 guidelines, list the equipment that the employer is required to make available to employees for entering a confined space.  (OSHA 1910.146 (d)(4)(i) through (ix))
10.	Under OSHA 1910.146 guidelines for entry of confined spaces, when is an "attendant" required? (OSHA 1910.146 (d)(6))
11.	According to OSHA 1910.146, when can entry permits be cancelled? (OSHA 1910.146 (e)(5)(i) and (e)(5)(ii))

12.	OSHA 1910.146 s how long?	states that cancelled e (OSHA 1910.146	entry permits must be retained by the employer for 6 (e)(6))
13. /		A 1910.146, what info (OSHA 1910.146 (f)(	ormation is required to be identified on an entry  1) through (0(14))
14.			re employers required to provide training to OSHA 1910.146 (g)(2)(i) through (g)(2)(iv))
15.		IA 1910.146, what ar 910.146 (i)(1) throug	e the duties of the "attendant"? h (i)(10))
16.		IA 1910.146, what ar 910.146 (j(1) through	e the duties of the "entry supervisor"? n (j)(6))
17.	devices designed	HA 1910.146, when we to retrieve personnel 910.146 (k)(3)(ii))	orking in confined spaces, when are mechanical required?

18. According to OSHA 1910.146, at least one person on the identified rescue team must hold a current certification in what two health-related areas?  (OSHA 1910.146 (k)(2)(iii))

# Occupational Safety and Health Standards (OSHA), Subpart J — General Environmental Controls, "The Control of Hazardous Energy (Lockout/Tagout)" (OSHA Standard Number 1910.147)

(Study Guide Questions for West Virginia Underground Storage Tank System Repair Technician Exam)

1. OSHA 1910.147 standards applies to the control of energy during _?  (OSHA 1910.147 (a)(2)(i))	
2. What operations are not covered by OSHA 1910.147? (OSHA 1910.147 (a)(2)(ii)(A))	
3. Define "affected employee" according to OSHA 1910.147. (OSHA 1910.147 (b))	
4. Define "lockout" and "lockout device" according to OSHA 1910.147. (OSHA 1910.147 (b))	
5 Define "tagout" and "tagout device" according to OSHA 1910 147	

(OSHA 1910.147 (b))

6.	According to OSHA 1910.147, in the event an energy isolating device can't be locked out, what's required? (OSHA 1910.147 (c)(2)(i))
	7. According to OSHA 1910.147, any newly installed machines and equipment must be designed to accept a _?_ device. (OSHA 1910.147 (c)(2)(iii))
	8. According to OSHA 1910.147, when can identified lockout/tagout devices be used for other purposes? (OSHA 1910.147 (c)(5)(ii))
	<ol> <li>According to OSHA 1910.147, lockout and tagout devices in a facility must be standardized by what allowable methods? (OSHA 1910.147 (c)(5)(ii)(B))</li> </ol>
	10. According to OSHA 1910.147, tagout devices must have what minimum unlocking strength? (OSHA 1910.147 (c)(5)(ii)(C)(2))
	11. According to OSHA 1910.147, tagout devices must warn against hazardous conditions if the machine or equipment is energized. What are allowable statements that can be used on the legend of the tagout device?(OSHA 1910.147 (c)(5)(iii))

12. According to OSHA 1910.147, an "Energy Control Procedure" must be inspected how often to ensure procedures and requirements of the standard are being followed? (OSHA 1910.147 (c)(6)(i))
13. According to OSHA 1910.147, who can perform the required periodic inspection of an "Energy Control Procedure"? (OSHA 1910.147 (c)(6)(i)(B))
14. According to OSHA 1910.147, who must be instructed in the purpose and use of the "Energy Control Procedure"? (OSHA 1910.147 (c)(7)(i)(B))
15. According to OSHA 1910.147, when can a tagout device attached to an energy isolation device be bypassed or ignored? (OSHA 1910.147 (c)(7)(ii)(B))
16. According to OSHA 1910.147, when is employee retraining required as part of the "Energy Control Procedure"? (OSHA 1910.147 (c)(7)(iii)(A))
17. According to OSHA 1910.147, who can perform lockout or tagout on equipment or machines? (OSHA 1910.147 (c)(8))

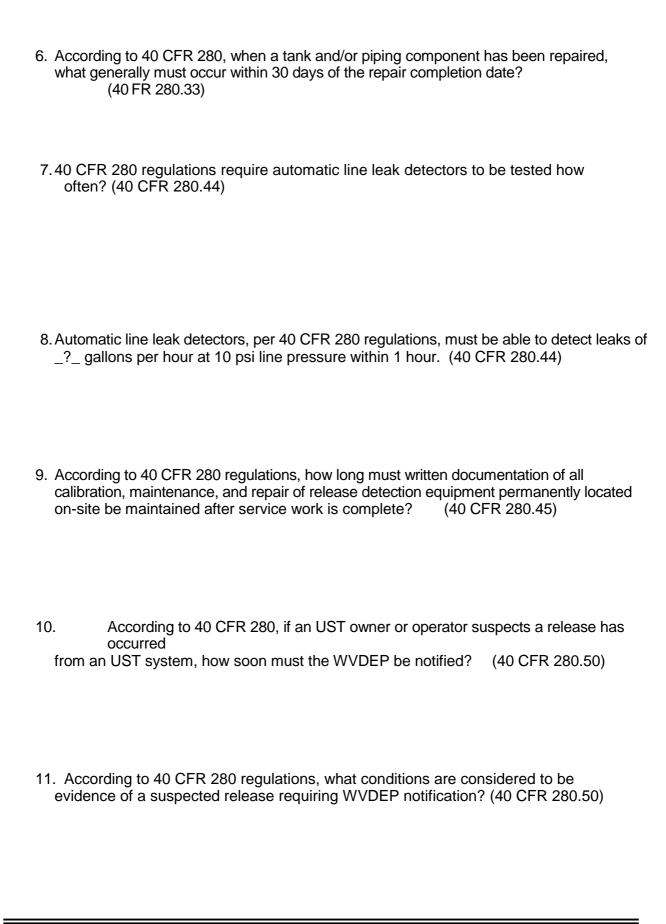
18.	devices designed	HA 1910.147, when tagout devices are used with energy ison with the capability of being locked, where must the tag attan (OSHA 1910.147 (d)(4)(iii)(A))	
19.	or tagout devices	HA 1910.147, when are "affected employees" to be notified s have been removed? 1910.147 (e)(2)(ii))	that lockout
20.		147 guidelines, who, unless unavailable, removes lockout o (OSHA 1910.147 (e)(3))	r tagout
21.		HA 1910.147, are outside servicing personnel (like contracto and tagout procedures? (OSHA 1910.147 (f)(2)(i))	rs) required

## Code of Federal Regulations 40 CFR Part 280 "Technical Standards and Corrective Requirements for Owners and Operators of Underground Storage Tanks (UST)

(Study Questions for West Virginia Underground Storage Tank System Repair Technician Exam)

	1.	In 40 CFR 280, the definition of "ancillary equipment" means any devices including, but not limited to, such devices as piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of _?_ to and from an UST. (40 CFR 280.12)
;	2.	In 40 CFR 280, the definition of "repair" means to _?_ a tank or UST system component that has caused a release of product from the UST system. (40 CFR 280.12)
;	in	40 CFR 280 states that overfill prevention equipment that automatically shuts off flow ito the UST must shut the flow off when the tank is no more than _?_ full. FOR 280.20)
4.	re	O CFR 280 states that overfill prevention equipment that alerts the transfer operator by estricting the flow into the UST must restrict the flow when the tank is no more than ?_full. (40 CFR 280.20)
5.	OI	ccording to 40 CFR 280 regulations, what must take place when a metal pipe section r associated fitting that has released product as a result of corrosion or other damage as occurred? (40 CFR 280.33)

40 CFR Part 280 Page 20



40CFR Part 280 Page 21

12. According to 40 CFR 280 regulations, what size spill or overfill of petroleum must be reported to the WVDEP? (40 CFR 280.53)
13. According to 40 CFR 280 regulations, what must be done in the event a spill or overfill of less than 25 gallons of petroleum occurs that cannot be cleaned up within 24 hours? (40 CFR 280.53)
14. In order to verify that secondary containment systems meet required criteria, testing of system sumps and interstices are required at installation, and how often thereafter? (40CFR 280.35)
15. New or replaced motor fuel dispenser systems must have under-dispenser containment. What components does the motor fuel dispenser system include? (40CFR 280.20)

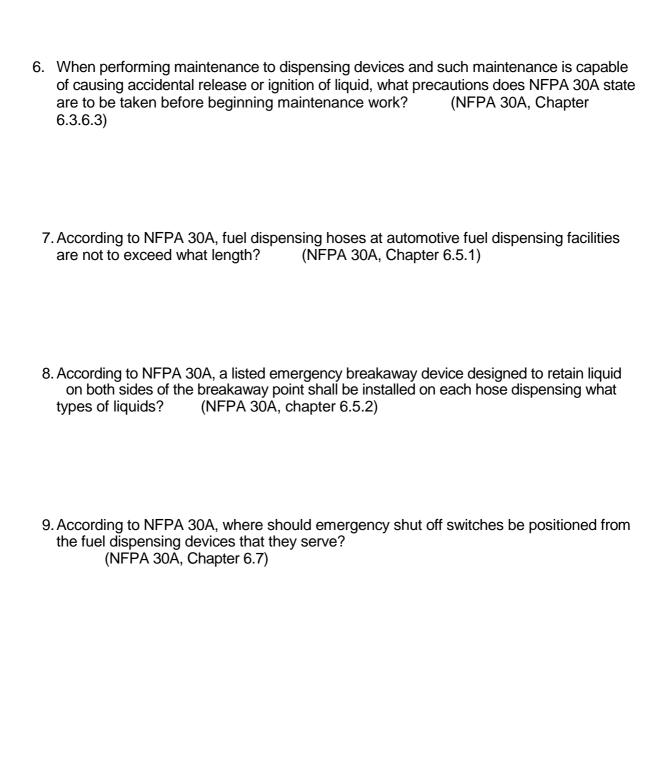
40 CFR Part 280 Page 22

## National Fire Protection Association — NFPA 30A — "Code for Motor Fuel Dispensing Facilities and Repair Garages" (Chapter 5 - Piping for Liquids, Chapter 6 — Fuel Dispensing Systems) — 2012 Edition

(Study Guide Questions for West Virginia Underground Storage Tank System Repair Technician Exam)

1.	Per NFPA 30A guidelines, piping components made of low melting point materials are permitted to be used without backfill in what types of sumps? (NFPA 30A, Chapter 5.2.7)
2.	According to NFPA 30A, flexible piping connections must be provided at what locations within the piping system? (NFPA 30A, Chapter 5.3.2.1)
3.	NFPA 30A states that fiberglass-reinforced plastic (FRP) piping does not require flexible joints if what conditions exist? (NFPA 30A, Chapter 5.3.3)
4.	According to NFPA 30A, vent piping connected to underground tanks storing Class I liquids (i.e. gasoline) should extend how far above ground?(NFPA 30A, Chapter 5.6.2)
5.	According to NFPA 30A, when tank vent piping is installed within or attached to a canopy, the vent pipes must be terminated at what height? (NFPA 30A, Chapter 5.6.3)

NFPA 30A Page 23



NFPA 30A Page 24

### West Virginia Department of Environmental Protection "Miscellaneous Testing Report Form" — Revised 7/19/2010

(Study Guide Questions for West Virginia Underground Storage Tank System Repair Technician Exam)

1.	The applicable portions of the Miscellaneous Testing Report Form must be completed and provided to the facility owner/operator within ? days of the test date.  (WVDEP Miscellaneous Testing Report Form, Introduction)
2.	What facility information is required to be included in the Miscellaneous Testing Report Form? (WVDEP Miscellaneous Testing Report Form, Section A)
3.	When testing spill buckets, what information is required on the Miscellaneous Testing Report Form? (WVDEP Miscellaneous Testing Report Form, Section C)
4.	According to the Miscellaneous Testing Report Form, what action must occur if product is delivered to a system with a ball float and a tight fill cannot be achieved or there is a pressure drop on the system?  (WVDEP Miscellaneous Testing Report Form, Section D)

5.	According to the Miscellaneous Testing Report Form, how often are routine testing of sumps and under-dispenser containment required?  (WVDEP Miscellaneous Testing Report Form, Section E)
5.	When testing sumps and under-dispenser containment, the Miscellaneous Testing Report Form indicates, if not using one of the test methods listed on the form, containment sumps being hydrostatically tested must be filled at least 6 inches above the highest penetration, fitting or joint and allowed to stand at least what length of time before beginning the test. (WVDEP Miscellaneous Testing Report Form, Section E)
6.	When testing sumps and under-dispenser containment, what information is required to be documented on the Miscellaneous Testing Report Form?  (WVDEP Miscellaneous Testing Report Form, Section E)
7.	When testing sumps and under-dispenser containment, the Miscellaneous Testing Report Form requires the tester to verify that water sensors were properly functioning at what time during the testing procedure?  (WVDEP Miscellaneous Testing Report Form, Section E)
8.	According to the Miscellaneous Testing Report Form, how often are routine testing of interstitial spaces required? (WVDEP Miscellaneous Testing Report Form, Section F)

9. When testing interstitial spaces, the Miscellaneous Testing Report Form requires what information to be documented? (WVDEP Miscellaneous Testing Report Form, Section F) 10. In the event that a repair is made to under-dispenser containment before testing, what must the tester include as documentation on the Miscellaneous Testing Report Form? (WVDEP Miscellaneous Testing Report Form, Section G) Page 27